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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,702	11/05/2003	John Douglas Oakey	M02B131	7081

7590 01/25/2005

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EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT	PAPER NUMBER
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3744

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/701,702	OAKLEY ET AL. ED	
	Examiner	Art Unit	
	William C Doerfler	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11-5-2003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by DeMarco.

DeMarco shows a system for removing a nitrogen from a predominately methane stream to provide a purer methane stream 20 and a nitrogen enriched stream 24 (which then passes through lines 26,28 and 38). Reference numeral 2 refers to a conduit which places the nitrogen enriched stream in communication with the feed natural gas pipeline.

Claims 1,6,7,10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Forg et al.

Forg et al show a system for removing a nitrogen enriched stream from the top of a double rectification column 35,29, and a liquid, enriched methane stream from the bottom of the column. Valve 42a, as discussed in lines 42-57 of column 5, allows feed from line 1 to be mixed with the exiting nitrogen enriched stream to conserve a desired

minimum methane concentration. In regard to claim 7, the vapor is raised in pressure by compressor 41.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2,3,8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forg et al in view of Butts.

Forg et al disclose applicants' basic inventive concept, a double column separation system for providing a nitrogen enriched stream from a natural gas feed, substantially as claimed with the exception of using a Joule Thomson valve to provide the refrigeration for the separation. Butts shows this feature to be old in the nitrogen/methane separation art with J-T valve 42 providing the refrigeration for the

separation. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Butts to modify the separation system of Forg et al by using a Joule-Thomson valve to provide the refrigeration for the separation to provide cooling due to rapid expansion which will assist in the separation process by cooling the rapidly expanding gas to promote condensation of the less volatile constituent. In regard to claim 9, the mole fraction of methane for the nitrogen enriched stream is seen as a matter of obvious design choice for an ordinary practitioner in the art to provide a nitrogen enriched stream that can still be used as a fuel as desired by Forg et al.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forg et al in view of DeMarco.

Forg et al disclose applicants' basic inventive concept, a double column separation system for providing a nitrogen enriched stream from a natural gas feed, substantially as claimed with the exception of using an expansion turbine to provide the refrigeration for the system. DeMarco shows this feature to be old in the nitrogen/methane separation art with expansion engine 6 providing the refrigeration for the system. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of DeMarco to modify the separation system of Forg et al by using an expansion engine to provide the refrigeration for the separation to provide cooling for the system while recovering work (using the attached generator).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forg et al in view of Butts as applied to claims 2,3,8 and 9 above and further in view of DeMarco.

Forg et al, as modified, disclose applicants' basic inventive concept, a double column separation system for providing a nitrogen enriched stream from a natural gas feed with a Joule-Thomson valve to provide refrigeration for the separation, substantially as claimed with the exception of using an expansion turbine to provide the refrigeration for the system. DeMarco shows this feature to be old in the nitrogen/methane separation art with expansion engine 6 providing the refrigeration for the system. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of DeMarco to modify the separation system of Forg et al by using an expansion engine to provide the refrigeration for the separation to provide cooling for the system while recovering work (using the attached generator).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forg et al in view of McNeil et al.

Forg et al disclose applicants' basic inventive concept, a double column separation system for providing a nitrogen enriched stream from a natural gas feed, substantially as claimed with the exception of using a pump to remove the liquid product from the column and increase the pressure of the product. McNeil et al show this feature to be old in the nitrogen/methane separation art with pump 36 providing a high pressure product and a means to move the liquid from the bottom of the rectification tower. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of McNeil et al to modify the separation system of Forg et al by using a pump to remove the liquid product from the column to provide high pressure product.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Twomey, Howard et al, Vines et al, Juncker et al and Swallow show systems for separating nitrogen and methane.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (571) 272-4808. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



William C Doerrler
Primary Examiner
Art Unit 3744

WCD